

*QinetiQ*

# QinetiQ Capability for CBMANET

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# Introducing QinetiQ

- One of Europe's largest R&D organisations
- Formed from former MOD research labs (DERA)
- Now global defence and security company
  - US presence growing rapidly – numerous acquisitions
- Huge breadth and depth of capability and expertise
  - artificial intelligence, security, networking
  - Optronics, air frames, ship hulls, quantum KD
  - Signal processing, nano devices, Etc. etc...
- Led flagship DARPA projects
  - DOTS, CoAX (joint PIs with IHMC, BBN, AIAI)

# Artificial Intelligence Capability

- Unique capability and strong practical application experience
- Machine learning:
  - Especially symbolic machine learning – important here.
    - Also sub-symbolic techniques
- Optimisation:
  - Evolutionary techniques, PSO, ACO, Pareto optimality...
- Planning, Knowledge Representation
- MAS: application to teams of UAVs
- Policy-based control to security and networking

# Comms & Networking Capability

- ~20 years wireless networking experience
  - Developed packet radio demonstrator in late-1980s
- ~350 scientists and engineers
- Broad expertise in all areas of communications, networking and RF engineering
- Recent applied research programmes studying ad hoc networking
- MOD sponsored programme providing a concept demonstration of an acoustic sensor network
- Extensive modeling and simulation capabilities supporting real-world experimentation
- Large, automated test beds for experimenting in ad hoc and wireless networking

# AI in Networking and Comms

- We understand *AI and its application* to networking
- Game theory for analysing ad hoc routing
- ACO to routing
- Optimisation and Pareto optimality to resource scheduling
  - MCDA for dynamic uncertain problems
- Frequency assignment, dynamic frequency management
  - Reactive planning
- Intruder location in ad hoc networks – Bayesian inferencing
- Let's team!

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